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THE ADMINISTRATIVE EFFECTS OF REORGANIZATION IN SMALL HIGH SCHOOLS OF WEST VIRGINIA

BY

LAKIN FISKE ROBERTS

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Bureau Ednl. Psy. Research
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PREFACE

The wave of interest and belief in the secondary school which has swept across this country during the last fifteen years has left in its wake a rather stupendous problem in educational administration. As the public began to realize the educational possibilities of the high school, administrators were everywhere swamped with the problems of providing housing facilities for the students. For that matter this problem is even now far from solved in many communities. Nevertheless, it may be said that we are now passing from a period of *establishment* of the high school to a period of *organization*. Now that the physical equipment is reasonably well provided we are quite properly turning to the problems of more effectively organizing the curricular and administrative aspects of the high school. This is necessary in order that high school instruction may be increased in efficiency and, at the same time, kept within reasonable cost limits.

In no section of the country has there been evidence of a greater interest in the improvement of these administrative aspects of secondary education than in the state of West Virginia. In 1925 this problem assumed concrete form when the State Board of Education authorized the appointment of a coöperative committee from three interested educational organizations in the state to develop secondary school curriculums adapted to different types of school organizations. The responsibility for the direction of this investigation of secondary school conditions, and the development of curriculums suitable for the types of school organization found, was undertaken by Dr. Lakin Fiske Roberts.

The work of this committee resulted in the preparation of a bulletin, published in 1926, carrying very specific suggestions as to school organization and curricular offerings suitable to high schools of the various sizes and types. It was recommended by the State Board of Education that the curricular

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and organization changes proposed by the preliminary report be tried out for one year before further action was taken.

As was expected, many of the schools made the adjustments recommended to them by the committee. These adjustments involved changes in such items as the number of teachers employed, the number of courses offered, the number of classes offered, the per pupil cost of instruction, per pupil cost for other non-instructional activities, etc. By his shrewd recognition and use of these factors as possible units for determining the effect of these curricular and organization changes Dr. Roberts was able to reveal very definitely just what these administrative changes meant to the high schools of West Virginia.

It is believed that in this study he has contributed something of significance to students of educational administration. He has shown that administrative changes in schools can be measured in tangible units. He has shown the high school administrators in West Virginia that the recommendations of the curriculum committee were generally in keeping with efficiency and economy. Most important of all he has revealed by this study certain further adjustments which needed to be made by those responsible for the administration of secondary education in West Virginia. As evidence of the practical utility of the study a number of the previous recommendations of the committee were rewritten when the final revised report, which carried the approval of the State Board of Education, was published.

This movement for the reorganization of secondary education in West Virginia has received a serious set-back through the untimely death of Dr. Roberts within a year of the completion of this study. However, many of his ideas of what a properly planned curriculum and a properly organized high school should be, may yet be brought into tangible form, and his influence may still be felt among school administrators of the state through the excellent revision of the state report on *Organization, Administration, and Course of Study for Junior and Senior High Schools* which was prepared under his direction and published shortly before his death.

This study is published at the request of his family, in the hope that through it, the program of service to his state to which he had dedicated his life, may be kept alive. It is presented at this time in the firm belief that it contains many useful suggestions for those interested in the administration of secondary education, and that it is a worthy contribution to the literature of practical school administration.

HARRY A. GREENE,

Associate Professor of Education

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CHAPTER I

INTRODUCTION

The greatest present day need in secondary education in West Virginia, in the minds of those responsible for the schools, is the development of a program of *reorganization* in the high schools now in existence. Until recently educators in the state have been more concerned with encouraging the *establishment* of high schools. Now, state school authorities are satisfied that a rather complete reconstruction of policies with reference to the control and accrediting of high schools is necessary. In fact it is now under way. Prior to 1926 the form of guidance given by state administrators in making the high school curriculum was general in nature. Suggestions relative to organizing courses into curriculums consisted of one recommended program of studies, arranged as a single curriculum without regard to size of school. As is set forth in a succeeding chapter of this study, state school authorities in West Virginia have revised their plan of supervising the organization of courses into curriculums for high schools of different enrollments and different numbers of teachers.

This revised plan for the supervision of the small high schools of West Virginia was devised in order to improve curricular organizations and was approved by the State Board of Education for the school year 1926-1927 with the understanding that it was to undergo a year of experimentation and study. The purpose of this study is to evaluate the changes that have resulted from the year of experimentation and to determine the practicability of the curricular reorganizations now proposed. The study is an attempt to contribute in a definite and practical way to the solution of a state school administration problem in the organization of small high schools.

The Problem of This Study[1]

The problem of this study is to determine the administrative effects of the curricular changes that have been brought about by the adoption of the recommended curriculums and further to determine what administrative effects would result were the recommended uniformity in curricular and school organization of small high schools to be consummated.

The actual changes that have resulted have been determined by a study of the organizations of the high schools during the trial year (1926-27) and their organizations for the previous year. The effects of changes that would result from complete adoption of the recommended plan have been anticipated in order that all evidence for and against the proposal be available to those charged with the responsibility of making decisions relative to its final adoption as a state policy. A method of procedure was devised which would reveal in a simple way the changes which took place within a number of schools of approximately the same enrollment. It consisted of obtaining a typical school situation made up of all the elements of curricular and school organizations of a particular group of schools and combining them in such a way as to summarize the characteristics of the group. The typical situation thus obtained was termed a "typical school." Changes in curricular and school organizations were then measured by means of these typical schools.

It was next necessary to define units of difference by which the administrative effects of the changes revealed in the typical schools could be determined. These units as defined in this study are the amounts of change in number of teachers, number of courses offered, number of classes in operation, salary cost of instruction per pupil in the different subject-matter divisions, and salary cost of non-instructional activities per pupil. These cost figures state teacher time and pupil distributions in terms of dollars, and are measures expressing the comparative economy of different curricular and school organizations which demand varying amounts of teaching time and different pupil distributions.

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[1] For the suggestion of the method of procedure in the study of this problem the writer is indebted to Dr. Harry A. Greene, Associate Professor of Education, State University of Iowa. To him, and also to Dean P. C. Packer, Dr. E. T. Peterson, and Dr. T. J. Kirby, all of the College of Education, State University of Iowa, he is obligated for advice and helpful criticism in the pursuit of the investigation.

To L. O. Taylor, Supervisor of High Schools of West Virginia, Mae Newman of Huntington, West Virginia, E. E. Church, Principal of the High School, Martinsburg, West Virginia, W. E. Buckey, Principal of the High School, Fairmont, West Virginia, and to many others who contributed to this study, the writer also wishes to express his gratitude.

Experimentation during the year by certain schools, under the auspices of the Secondary School Principals Association of West Virginia, and investigations to ascertain facts regarding the effects of changes have modified the original plan of reorganization in a few respects. It is to be hoped that the method of evaluating curriculums presented in this study and the method of determining the practicability of proposed curriculums will contribute to the solution of similar problems in school administration.

CHAPTER II

HIGH SCHOOL REORGANIZATION IN WEST VIRGINIA

The public high schools of West Virginia have developed largely within the last sixteen years. During the period 1910 to 1926 the total number of high schools has increased from eighty-four to 238; the number of four year accredited high schools from thirty-one to 180.[1] The growth in total enrollment has been equally as great, having increased from 4,900 in 1910 to 35,334 in 1926.[2] For the year 1926-27 the total number of high schools was 250, with 200 out of this number accredited.[3]

In common with many other sections of the country, West Virginia has in the past two decades had extraordinary growth in the number of public high schools and the time and energy of state school officials have been devoted, for the most part, to encouraging the establishment of high schools. However, officials now recognize a second stage in state school administration as is shown by the following quotation:

"While there is still need in rural sections for more high schools for children of the open country, West Virginia, in its high school development, is rapidly passing from the period of establishment to the period of organization. Therefore, the pressing problem today is to increase the efficiency of high school instruction and to keep high school cost within reasonable limits."[4]

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[1] Taylor, L. O., *Report of the State Supervisor of High Schools of West Virginia*, State Department of Education, Charleston, 1926.

[2] *Ibid.*

[3] Taylor, L. O., *Report of the State Supervisor of High Schools of West Virginia*, State Department of Education, Charleston, 1927.

[4] *Organization, Administration and Courses of Study for Junior and Senior High Schools, State of West Virginia, 1926.* Prepared under the direction of Lakin Fiske Roberts. Issued by Department of Education, Charleston, West Virginia.

Lack of time for supervising and directing the school and curricular organizations resulted in wide diversity of practices among the high schools. The committee on reorganization in West Virginia states the situation as follows:

"A careful study of high school curriculums shows a wide diversity of practice, even within the range of schools of approximately the same size and serving the same type of communities. This variation is accidental rather than reasoned, as the purpose which high schools serve in the various sections of our state is not so different as to cause such diversity; it further shows that there is diversity in the number of high school teachers employed in high schools having similar enrollment. Finally, this study shows that as the work of the high school is now organized little provision is made for definite and uniform teaching positions, which condition makes it difficult for teachers to prepare for definite kinds of high school teaching and be assured of a place where they may teach that for which they have prepared to teach."[5]

In an attempt to improve the present situation the efforts of several agencies were coördinated in the attack upon the problems, and in June 1925, the State Board of Education authorized the reorganization of the curriculums for the junior and senior high schools of the state. The following agencies were authorized to coöperate in the project:

The State Secondary School Principals Association,
The High School Division of the State Department of Education,
The Department of Education, West Virginia University.

Committees were appointed to work out separate portions of the curricular organization. These committees proposed a step toward uniformity by setting up what might be called standard curriculums and school organizations. It was impossible to work out the details of school organizations upon a strictly scientific basis. Therefore, the recommendations are the results of committee judgments. Certain decisions were made regarding various phases of organization in order to obtain a framework around which recommended school organizations were constructed. These were formulated in specific detail as to the following phases:

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[5] *Ibid.*

1. Number of teachers per given average daily attendance,
2. Number of periods per week per teacher,
3. Number and length of recitation and student activity periods in the daily schedule,
4. Number of periods devoted to supervision,
5. Number of subject-matter divisions in a given sized school,
6. Number and combination of subjects assigned teachers,
7. Number and character of required and elective courses,
8. Number of classes,
9. The arrangement of courses in the curriculums.

The first phase of organization as given in the preceding outline deals with the number of teachers and size of school. Table I gives the decisions of the reorganization committee as to the number of teachers needed to operate a curriculum for a given sized school.

TABLE 1

Number of Teachers and Size of School

I Schools having average daily attendance 45—3 teachers.
II Schools having average daily attendance 70—4 teachers.
III Schools having average daily attendance 100—5 teachers.
IV Schools having average daily attendance 130—6 teachers.

The fifth phase concerns the decisions as to the number of subject-matter divisions which should be included in curriculums for schools of various sizes. The following table presents these subject-matter divisions:

TABLE 2

Subject-Matter Divisions According to Size of School

Average Daily Attendance 45	Average Daily Attendance 70	Average Daily Attendance 100	Average Daily Attendance 130
English	English	English	English
Social Studies	Social Studies	Social Studies	Social Studies
Mathematics	Mathematics	Mathematics	Mathematics
Science	Science	Science	Science
Foreign Language or Fine Arts or Home Economics	Foreign Language or Fine Arts	Foreign Language or Fine Arts	Foreign Language or Fine Arts
	Agriculture and Home Economics	Agriculture and Home Economics or Commerce	Agriculture or Commerce and Home Economics or Commerce

Under the plan of organizing the school and of administering the curriculums, teachers were limited in subject assignments to two fields. These teaching combinations together with special fields are as follows:

1. English and social studies
2. English and fine arts
3. English and Latin
4. English and French
5. Mathematics and science
6. Social studies and either English, Latin, French, mathematics, or science
7. Home economics and science
8. Agriculture and either science, mathematics, or manual arts
9. Commerce
10. Fine arts
11. Industrial arts
12. Music
13. Physical education.

In planning organizations for schools of different sizes, it was necessary to estimate the points in the total enrollments of schools which would require second sections of courses in the various years[6] and the points where alternation would be possible. Fixing the maximum class size at thirty, these points as decided upon are as follows:

I. Schools with an average daily attendance of forty-five pupils. Alternation of eleventh year courses with twelfth. No second sections.

II. Schools with an average daily attendance of seventy pupils. Alternation of eleventh year courses with twelfth. Second sections in ninth year.

III. Schools with an average daily attendance of 100 pupils. Alternation of eleventh year courses with twelfth. Second sections in ninth year.

IV. Schools with an average daily attendance of 130 pupils. No alternation of courses. Second sections in ninth and tenth years.

Several curriculums and school organizations were arranged for each group. These are made up of practically the same academic courses but vary as to the number of non-academic courses. Hence, by proper selection of curriculums from those suggested it is possible for high schools employing five teachers to offer in addition to academic courses, home economics and agriculture or commerce, and in case of high schools of six teachers to offer commerce and either home economics or agriculture. It was suggested that schools make selections from the following curriculums:

Three teacher high schools:

1. A curriculum including academic subjects only,
2. A curriculum including home economics but not Latin or French.

Four teacher high schools:

1. A curriculum without home economics or agriculture,

---

[6] The term year rather than grade is used throughout this study in order to agree with the terminology used in recent publications of the State Department of Education of West Virginia.

2. A curriculum including home economics,
3. A curriculum including agriculture,
4. A curriculum including home economics and agriculture.

Five teacher high schools:

1. A curriculum without home economics or agriculture,
2. A curriculum including home economics,
3. A curriculum including home economics and two years of agriculture,
4. A curriculum including commerce.

Six teacher high schools:

1. A curriculum including home economics and two years of agriculture,
2. A curriculum including home economics and four years of agriculture,
3. A curriculum including home economics and commerce.

ILLUSTRATIONS OF RECOMMENDED CURRICULUMS AND ORGANIZATIONS

One curriculum and its corresponding organization of the teaching force for each group of small high schools has been selected for use in this study. They are typical of the reorganization plan which has been described, and illustrate the phases of organization not already discussed in detail. These typical curriculums and organizations are presented in the following pages.

SUGGESTED CURRICULUM FOR FOUR YEAR HIGH SCHOOLS EMPLOYING THREE TEACHERS

Without Home Economics

(Average Daily Attendance—Forty-Five Pupils)

	Periods Per Week
Ninth Year	
English	5
Citizenship and Occupations	5
Elementary Mathematics	5
Elementary Science	5
Health and Physical Education	2
Tenth Year	
English	5
Biology	5
Modern World History	5
Geography	5
Health and Physical Education	2
Eleventh Year	
English	5
American History	5
Algebra	5
Chemistry or Latin or French	5
Health and Physical Education	2
Twelfth Year	
English	5
Elementary Sociology and Economics or Latin or French	5
Physics	5
Plane Geometry	5
Health and Physical Education	2

Note: Schools of this size may offer either Latin or French, but not both languages. Fine arts 11 and 12 may be offered in place of either language.

SUGGESTED ORGANIZATION OF TEACHING FORCE FOR FOUR YEAR HIGH SCHOOLS EMPLOYING THREE TEACHERS

Without Home Economics

(Numbers refer to years in which courses are offered)

	Periods Per Week
Teacher A	
English 9	5
English 10	5
English 11 or 12	5
*Latin 11 or French 11	5
†Latin 12 or French 12	5
	25
Teacher B	
Citizenship and Occupations 10	5
Modern World History 10	5
American History 11	5
Elementary Sociology and Economics 12	5
Geography 10	5
	25
Teacher C	
Elementary Science 9	5
Biology 10	5
Physics 12 or Chemistry 11	5
Elementary Mathematics 9	5
Algebra 11 or Geometry 12	5
	25

Note: Schools of this size may offer either Latin or French, but not both languages.

*Fine Arts 11.

†Fine Arts 12.

SUGGESTED CURRICULUM FOR FOUR YEAR HIGH SCHOOLS EMPLOYING FOUR TEACHERS

Offering Home Economics (Not Smith-Hughes)

(Average Daily Attendance—Seventy Pupils)

Ninth Year		Periods Per Week
English		5
Citizenship and Occupations		5
Elementary Mathematics		5
Elementary Science		5
or		
Home Economics		5
Health and Physical Education		2
Tenth Year		
English		5
Biology		5
Modern World History	Elect Two	5
Geography		5
Home Economics		5
Health and Physical Education		2
Eleventh Year		
English		5
American History		5
Algebra		5
Chemistry		5
or		
Latin or French		5
Health and Physical Education		2
Twelfth Year		
English		5
Economics and Sociology		5
or		
Latin or French		5
Geometry		5
Physics		5
Health and Physical Education		2

Note: Schools of this size may offer either Latin or French, but not both languages. Fine Arts 11 and 12 may be offered in place of either language.

SUGGESTED ORGANIZATION OF TEACHING FORCE FOR FOUR YEAR HIGH SCHOOLS EMPLOYING FOUR TEACHERS

Offering Home Economics (Not Smith-Hughes)

(Numbers refer to years in which courses are offered)

	Periods Per Week
Teacher A	
English 9—Section A	5
English 10	5
English 11 or 12	5
*Latin 11 or French 11	5
†Latin 12 or French 12	5
	25
Teacher B	
Citizenship and Occupations 9	10
Modern World History 10	5
American History 11, or Economics and Sociology 12	5
English 9—Section B	5
	25
Teacher C	
Home Economics 9	5
Home Economics 10	5
Elementary Science 9	5
Biology 10	5
	20
Teacher D	
Elementary Mathematics 9	10
Algebra 11 or Geometry 12	5
Physics 12 or Chemistry 11	5
Geography 10	5
	25

Note: Schools of this size may offer either Latin or French, but not both languages.

*Fine Arts 11.

†Fine Arts 12.

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SUGGESTED CURRICULUM FOR FOUR YEAR HIGH SCHOOLS EMPLOYING FIVE TEACHERS

Offering Home Economics and Two Years of Agriculture (Not Smith-Hughes)

(Average Daily Attendance—100 Pupils)

		Periods Per Week
Ninth Year		
English		5
Citizenship and Occupations		5
Elementary Mathematics		5
Elementary Science		5
or		
Home Economics or Agriculture		5
Health and Physical Education		2
Tenth Year		
English		5
Biology		5
World History		5
Geography		5
Home Economics	Elect Two	5
or		
Agriculture		5
Health and Physical Education		2
Eleventh Year		
English		5
American History		5
Algebra		5
Chemistry	Elect Two	5
Latin or French		5
Health and Physical Education		2
Twelfth Year		
English		5
Economics and Sociology		5
Latin or French		5
Physics	Elect Two	5
Geometry		5
Health and Physical Education		2

Note: Schools of this size may offer either French or Latin, but not both languages. Fine arts 11 and 12 may be substituted for either language.

SUGGESTED ORGANIZATION OF TEACHING FORCE FOR FOUR YEAR HIGH SCHOOLS EMPLOYING FIVE TEACHERS

Offering Home Economics and Two Years of Agriculture (Not Smith-Hughes)

(Numbers refer to years in which courses are offered)

	Periods Per Week
Teacher A	
English 9—Section B	5
English 10	5
English 11 or 12	5
*French or Latin 11	5
†French or Latin 12	5
	25
Teacher B	
Citizenship and Occupations 9	10
Modern World History 10	5
American History 11, or Economics and Sociology 12	5
English 9—Section A	5
	25
Teacher C	
Agriculture 9	5
Agriculture 10	5
Chemistry 11	5
Physics 12	5
Geography 10	5
	25
Teacher D	
Home Economics 9	5
Home Economics 10	5
Elementary Science 9	5
Biology 10	5
	20
Principal	
Elementary Mathematics 9	10
Algebra 11, or Geometry 12	5
Supervision	10
	25

*Fine Arts 11.
†Fine Arts 12.

SUGGESTED CURRICULUM FOR FOUR YEAR HIGH SCHOOLS EMPLOYING SIX TEACHERS

Offering Home Economics and Two Years of Agriculture

(Average Daily Attendance—130 Pupils)

Ninth Year		Periods Per Week
English		5
Citizenship and Occupations		5
Elementary Mathematics		5
Elementary Science		5
or		
Home Economics or Agriculture		5
Health and Physical Education		2
Tenth Year		
English		5
Biology		5
Modern World History		5
Geography		5
or		
Home Economics or Agriculture		5
Health and Physical Education		2
Eleventh Year		
English		5
American History		5
Algebra	Elect Two	5
French or Latin		5
Chemistry		5
Health and Physical Education		2
Twelfth Year		
English		5
Elementary Economics and Sociology		5
Physics	Elect Two	5
French or Latin		5
Geometry		5
Health and Physical Education		2

Note: Schools of this size may offer either Latin or French, but not both languages. Fine arts 11 and 12 may be offered in place of either language.

SUGGESTED ORGANIZATION OF TEACHING FORCE FOR FOUR YEAR HIGH SCHOOLS EMPLOYING SIX TEACHERS

Offering Home Economics and Two Years of Agriculture

(Numbers refer to years in which courses are offered)

	Periods Per Week
Teacher A	
English 10—Section A	5
English 10—Section B	5
English 11	5
*French 11 or Latin 11	5
†French 12 or Latin 12	5
	25
Teacher B	
English 9—Section B	5
English 9—Section A	5
English 12	5
Citizenship and Occupations 9	10
	25
Teacher C—Principal	
Supervision	10
Modern World History 10	5
American History 11	5
Elementary Economics and Sociology 12	5
	25
Teacher D	
Elementary Mathematics 9	10
Algebra 11	5
Geometry 12	5
Geography 10	5
	25
Teacher E	
Home Economics 9	5
Home Economics 10	5
Biology 10	10
Elementary Science 9	5
	25
Teacher F	
Agriculture 9	5
Agriculture 10	5
Chemistry 11	5
Physics 12	5
	20

*Fine Arts 11.

†Fine Arts 12.

CHAPTER III

SCOPE AND SOURCE OF DATA OF THIS STUDY

Scope of the Study

Small high schools form the majority of schools in West Virginia and the greatest need for reorganization is in their field. This study is limited to four year high schools of this type for the years 1925-26 and 1926-27.

The term "small high school" is defined for the purpose of this study as one having an enrollment of less than 160 pupils. The system of grouping the schools followed the classification of the committee on reorganization. Schools were divided according to total enrollment into the following groups:

Group I—Enrollments less than seventy.

Group II—Enrollments seventy to ninety-nine.

Group III—Enrollments 100-129.

Group IV—Enrollments 130-159.

Statistics in the form of average daily attendance are not collected by the High School Division of the State Department of Education. Hence it was necessary to substitute enrollment figures of average daily attendance as stated in the recommendations of the committee. Accordingly the grouping of high schools in this study is based upon the assumption that the ranges in enrollment are comparable to the single figure given in terms of average daily attendance.

The number of schools involved in this study is shown according to groups in the following table and schools will be referred to hereafter as belonging to certain groups determined by their enrollment.

TABLE 3

Number of Schools Used in the Study

Group	1925-26	1926-27
I	26	29
II	18	21
III	17	16
IV	11	14
Total	72	80

According to the records of the State Department there were eighty-four schools of this range of enrollment in 1925-26 and eighty-six in 1926-27. The totals of the above table show that 86 per cent of the available schools were included in the study for the first year and 93 per cent for the second year.

SOURCE OF DATA*

The official reports of all high schools of the state to the High School Division of the State Department of Education for the school years 1925-26 and 1926-27 comprised the main source of data. Reports for 1926-27 were called for in revised form, consisting of two blanks designated by the High School Division, Report on Program of Studies and Annual High School Report. The former consisted of information regarding the arrangement of courses in the curriculum and the latter a detailed report of the school's enrollment, teacher's daily schedule of classes and other duties, class enrollments and days of the week upon which classes met, salaries, and in addition, items not pertinent to this study.

The report form in use previous to 1926-27 was supplemented by collecting information during the present year for the school year 1925-26 upon the new report blanks. These blanks were collected by the High School Division assisted in certain cases by personal investigation by two high school principals and two agents, given official status by the State Superintendent of Schools.

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*The very extensive original tables on which many of the calculations reported in this study are based are on file in the Education Library of the University of Iowa together with the original manuscript.

CHAPTER IV

GENERAL METHOD OF PROCEDURE

Many schools during the trial year have made adjustments in harmony with the recommendations of the state committee. These adjustments will be described hereafter as partial adoption. In order to evaluate the effects of partial adoption, a detailed study of the curricular and school organizations of the individual schools was made for the school years 1925-26 and 1926-27. The schools for each year were classified into groups according to the size of school for which curriculums were arranged by the committee on reorganization. Since the purpose of the study was not primarily to measure the change one school had made from 1925-26 to 1926-27, but to determine, if possible, the net results of partial adoption of the recommended organizations, a typical school for each group for both years was derived. In obtaining these typical schools, such elements as subject-matter divisions, classes, enrollment, hours per week allotted to instruction and to activities other than instruction, and number of teachers, were used independently. The detailed organization of the curriculum, the daily schedule of recitations, and salaries were elements also used in deriving the typical schools. In order to show the typical situation with respect to these elements a median was obtained for each item. These measures made up a school representing the practice in the schools for their respective groups in all of the given elements. Since the medians were obtained independently and were later used as coordinating factors, the result was the same as if they were present uniformly and simultaneously in 50 per cent of the schools. Thus the compilation of the typical schools assumed that the medians in all elements existed in the same schools.

To anticipate the effects that would be brought about if all of the schools adopted all of the phases of the recommendations, it was necessary to obtain situations which would represent the recommended curricular and school organizations in operation. Therefore, the typical schools of 1926-27 were organized according to the recommended plans by transposing the enrollments of the former into the curricular and school organizations of the latter. The factors which make up the organization of any school are so numerous and variable that it was very difficult to isolate any one factor and study the effects of changes in terms of it. For example, a school might make a change in number of teachers, and the effects of this change might be so mingled with the effect of a decided increase or decrease in enrollment as to prevent a distinct analysis of the effects of either change. In order to approach a measure of change that represented the results of curricular and school reorganization alone, the factor of enrollment was held constant for each group. In this way units of difference in number of courses and classes offered, and number of teachers employed in a given organization, were measured without the distorting effect of varying enrollment. In order to obtain a unit of difference for evaluating the effects of partial and complete adoption of the recommended curricular and school organizations a method was devised to obtain subject-matter division costs per pupil based upon salaries. In the evaluation of partial and complete adoption of recommendations, variations in teachers' salaries were not allowed to influence the effects of curricular and school reorganization.[1] This was done by taking the salary cost per teacher for all schools as the average salary of teachers in all schools for 1926-27. Therefore the salary rate per teacher was held constant for the two years and for the recommended organization. In this way the same rate of cost for each subject-matter division resulted. Since total school enrollments were equated by classifying schools into four groups, the differences obtained in salary costs per pupil were the effects of school and curricular changes alone. The results thus obtained show salary cost of various subject-matter divisions over a period of two years, and comparisons may be made upon the basis of school and curricular organization—influenced only by the hours per week devoted to each and the number of pupils enrolled in each.

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[1] Superintendent was included as teacher in all cases where he was teaching in the high school. Principals were included in all cases.

CHAPTER V

METHOD OF PROCEDURE SPECIFICALLY DESCRIBED

CURRICULAR ORGANIZATION OF TYPICAL SCHOOLS

The first step in deriving a typical school for a group was to make a separate tabulation for each subject-matter division to show the number of courses and classes offered by each school for the ninth, tenth, eleventh, and twelfth years and the corresponding enrollments. A portion of the table for English, Group I, 1926-27, follows:

School	Ninth Year			Tenth Year			Eleventh Year*		
	Course	Required or Elective	Enrollment	Course	Required or Elective	Enrollment	Course	Required or Elective	Enrollment
I	English	R.	16	English	R.	17	English	R.	13
II	English	R.	16	English	R.	11	English	R.	30

These separate tables consisting of many pages of such material for subject-matter divisions were used in two ways. First, they were summarized for each group into one table which showed the number of courses and classes and the enrollments in each subject-matter division for each school. From the above section of a table it is evident that schools I and II had three courses and three classes each in English with enrollments forty-six and fifty-seven respectively. The tables for all subjects were filed with the original copy of this study, and are now available in the Educational Library of the University of Iowa. From these summaries, frequency tables were made of the number of schools offering a given number of courses and classes in each subject-matter division. The next step was to find the median number of courses and classes with their corresponding enrollments in each subject-matter division. In this connection it should possibly be explained that if practical arts, fine arts, normal training or commerce did not occur frequently enough to make a median as a separate subject-matter division, they were combined, classified as miscellaneous, and medians were found as above.

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*The twelfth year does not appear since the two schools alternated English courses in the eleventh and twelfth years. In all such cases courses were listed in the eleventh year.

The second use of the table illustrated was in grade placing courses and in obtaining titles of courses. Continuing the illustration from Group I, 1926-27, it was found that at least 50 per cent of the schools offered a course in ninth year social studies, and that 50 per cent of the courses in this year were in citizenship or civics. Hence in the curriculum of the typical school of this group there is listed a ninth year course in social studies entitled citizenship or civics. In general this method was used to grade place and obtain titles of courses in each subject-matter division.

Certain phases of curricular organization, however, required more detailed treatment. For example, if a course was offered by 50 per cent of the schools in two years combined, the course was listed in the year in which most schools offered it. This situation arose in the divisions of science and mathematics where practice in grade placing chemistry and courses in mathematics were diverse. If the number of classes in a subject-matter division was greater than the number of courses, this indicated that there were second sections of the same course or courses. The following method was used in placing these sections. If 50 per cent of the schools had second sections in a particular year then the extra class was assigned to the course given in that year. In case no one year showed enough second sections to form a median, but two consecutive years together did, the second section was indicated as belonging to the course offered in either one of the years.

Tabulations were made showing the number of schools having one, two, or three classes which met more than five times a week, as occurred when extra time was provided for science laboratory work and where two periods were devoted to practical arts and commerce. The range of this practice was from no additional time to three double periods per school. From this tabulation the median number of such classes for each group was found. Grade placement was determined by the same method used in placing second sections.

By following the above types of treatment it was possible to derive the curricular organization of the typical school for each group. These schools are presented in Chapter VI, first, showing only number of courses and classes, and second, showing the titles of courses offered each year.

PHASES OF SCHOOL ORGANIZATION

The method of treating the data allowed for time which teachers devoted to other divisions of the school system than the high school. Hence, fractions of teachers represent those who devoted only a portion of their time to the high school. The report form of the State Department included an item, "time to high school," for which high school principals were requested to "write in per cent, the proportion of school day devoted to high school duties." This item acted as a check upon the figure obtained. The items used in determining the number of teachers were:

A. Number of periods in the school day

B. Number of teachers listed by the individual school authorities

C. Number of periods that teachers were employed in other than high school duties

Formula: $\frac{A \times B - C}{A}$ = school's quota of teachers. A distribution table was made from these teacher quotas and the median number of teachers for each group determined.

Formula: $A \times B \times C \times 5$ = total clock hours per week the school was in operation.

SALARY COST

The purpose of cost items in this study is to evaluate organization in small high schools and to provide a unit of difference facilitating comparisons between curricular organizations. Total school enrollments in the various curricular organizations have, according to the criteria of West Virginia's recommendations, been equated by classifying the high schools into four groups. It was next necessary to select some method which would equate salary costs so that the resulting figures would evaluate organization independent of the effects of a salary range of $900 to $3720. This was done by taking salary cost per teacher for all typical schools as the average salary of teachers for all groups of schools for the school year 1926-27. This average salary was $1660 and was used as the basis for cost studies. The total salary cost for a typical or recommended organization was obtained by multiplying this average salary by the number of teachers.

METHOD OF APPLYING THE RECOMMENDED CURRICULAR ORGANIZATION TO THE ENROLLMENT OF THE TYPICAL SCHOOLS

In order to evaluate results of general adoption of the recommended organizations, some plan of obtaining an insight into administrative effects of the changes brought about, was necessary. The manner in which the curriculums, organizations of teaching force and administrative procedures are outlined in the publication of the State Department facilitated the solution of the problem.[1] Such facts as the single curriculum arrangement of the program of studies, the high proportion of required courses, electives stated as definite decisions among no more than three choices, the assignment of teacher load and the inclusion of the schedule of classes, made it possible to set up a series of procedures and consistently adhere to them. First, it was assumed that pupils would be uniformly enrolled for four courses, and second, that in a required course, the enrollment for that year and the course enrollment would be identical. Third, since pupils were uniformly enrolled for four courses elective courses for a given year were assigned the percentages of the total course enrollments which an equal distribution of those pupils would give. For example, if there was an enrollment of twenty in a given year and if the curriculum for that year consisted of three required and two elective courses, the enrollment in each of the required courses was counted as twenty, while an equal distribution of twenty (the total course enrollments if pupils were limited to four) would give an enrollment of ten in each elective course. If for the same year and enrollment, the curriculum were to consist of two required and three elective courses the enrollment for each required course was counted as twenty, for each elective course fourteen (actually thirteen and one-third) since fourteen is an equal distribution of forty among three courses.

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[1] *Organization, Administration and Courses of Study for Junior and Senior High Schools, State of West Virginia, 1926.* Issued by Department of Education, Charleston, West Virginia.

SUBJECT-MATTER DIVISION COSTS

A method adapted to the purposes of this study and limited to the salary phase of cost, was devised to obtain subject-matter division costs per pupil. Briefly it consists of multiplying the amount of instruction in hours devoted to each pupil during a week by the salary rate expressed as cost per hour. The formula for cost per pupil per week was derived as follows:

$$(1)\ \frac{\text{Clock hours per week per subject-matter division}}{\text{Enrollment per subject-matter division}} = \text{Hours of instruction per pupil per week}$$

$$(2)\ \frac{\text{Total salaries per week}}{\text{Hours in school week}} = \text{Rate of cost per hour}$$

$$(3)\ \text{Hours of instruction per pupil per week} \times \text{Rate of cost per hour} = \text{Per pupil cost of instruction per week}$$

Or, formula three may be expressed by using the first members of formulas one and two, as:

$$(4)\ \frac{\text{Clock hours per week per subject-matter division}}{\text{Enrollment per subject-matter division}} \times \frac{\text{Total salaries per week}}{\text{Hours in school week}} = \text{Per pupil cost of instruction per week}$$

The cost figures obtained by above method can be turned into cost per year by multiplying by the number of weeks in the school year, or the formulas may be adapted in the following manner to obtain cost per year directly:

$$\frac{\text{Clock hours per week per subject-matter division} \times \text{Number of weeks in school year}}{\text{Enrollment per subject-matter division}} \times \frac{\text{Salaries per year}}{\text{Hours in school week} \times \text{Number of weeks in school year}} = \text{Per pupil cost of instruction per year} \tag{5}$$

Simplifying the above, the resulting formula is:

$$\frac{\text{Clock hours per week per subject-matter division}}{\text{Enrollment per subject-matter division}} \times \frac{\text{Salaries per year}}{\text{Hours in school week}} = \text{Per pupil cost of instruction per year} \tag{6}$$

In order to facilitate the use of the formulas the necessary data were arranged in tabular form. First, the clock hours per week devoted to each subject-matter division were determined for each typical and recommended school. After these sets of figures were obtained, the next step was to determine the number of hours of instruction per pupil per week by using these figures in formula 1.

The use of formula 2 gave a salary rate for each typical and recommended school. The total salaries per week for each of these organizations were obtained by multiplying the average salary per week per teacher, $\frac{\$1660}{36}$ or \$46.11, by the median number of teachers. This amount was divided by the number of clock hours per week a school was in operation and gave the required rate of cost. For example, the total amount of salaries per week for the typical school of Group I, 1925-26, was \$184.44 and the number of hours per week the school was in operation, 105. Then $\frac{\$184.44}{105}$ or \$1.757 was the rate of salary cost for this typical school.

Finally, the amounts obtained by formulas 1 and 2 were used in a third formula to give the cost per pupil per week. Formula 4 shows the first two formulas combined into one for convenience in computation. In obtaining costs upon the year basis formula 6 was used.

The school week in this study is defined as the number of clock hours provided for in the daily schedule in operation for five days. The items used in determining it were:

A. Median number of periods per day
B. Median length of period in clock hours
C. Median number of teachers.

Cost of Activities Other Than Instruction

The phrase "activities other than instruction" includes duties of teachers other than formal classroom teaching and periods when no assignments were given by the school official filling out the report. No distinction was made in this study between superintendents, principals, and teachers, hence such items as "office," administration and supervision come under the above heading. Finally, since the majority of the schools in every group were, in 1926-27, operating a six period schedule, one of which was devoted to co-curricular activities, such items were also included in the phrase. The total enrollment of a school was used as the pupil service to be charged to these activities, since all the pupils of a school were served by them. The hours per week devoted to each pupil were found as above and a corresponding cost figure obtained upon the same cost rate as instruction.

As the same procedure was used in finding both the cost of the subject-matter divisions and the activities described above, comparison between the costs in the fields of instruction and non-instruction are possible. The cost of instruction as a unit was found by means of an aggregate average. The hours devoted to the various subject-matter divisions were summed, and designated total hours of instruction. The enrollments in the subject-matter divisions were added, giving the total number of pupils served. From these totals the cost of all instruction in each school was obtained, using the corresponding rate of cost.

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CHAPTER VI

SUMMARY OF CHANGES AND ADMINISTRATIVE EFFECTS

In order to measure the progress in high school reorganization that has already been made, and that which is still possible of attainment, certain findings will be presented by means of comparison of typical schools for the school years 1925-26, 1926-27, and the recommended schools. Adoption of the recommended organizations by the schools of the state during 1926-27 has brought about certain curricular changes over the organization of 1925-26, and has resulted in certain administrative effects. The administrative effects, that would result if changes were made to bring 50 per cent of the schools to complete adoption of the recommendations of the State Department, have been revealed by applying the recommended organizations to the median enrollments of 1926-27. These changes are summarized by means of tables, and certain implications are made as to their administrative effects.

Table 4 presents a general summary of teachers, total enrollments, courses and classes in the typical and recommended schools. The purpose of the table is to reveal changes in the above phases of school organizations.

TABLE 4
Teachers, Enrollment, Courses and Classes
Typical and Recommended Schools

	Group I 1925-26	1926-27	Recommended
Teachers	4	4	3
Enrollment	52	54	54
Courses	16	16	15
Classes	17	16	15
	Group II		
Teachers	5	4	4
Enrollment	80	80	80
Courses	19	18	16
Classes	19	18	19

	Group III		
Teachers	6.4	6.6	5
Enrollment	116	114	114
Courses	23	22	19
Classes	27	26	22
	Group IV		
Teachers	6.1	7	6
Enrollment	136	147	147
Courses	22	22	22
Classes	28	30	27

Table 4 shows that the typical schools of Group I for both years had one more teacher than the recommended organization made provision for. Group II is the only group which shows a decrease in the number of teachers and it conforms in 1926-27 to the number in the recommended school organization. Groups III and IV, while giving evidences of conformity to the recommended curriculums in so far as number of courses is concerned, showed increases in number of teachers. If the typical schools of Groups III and IV were in conformity to the recommended curriculums the number of classes in both would be materially decreased.

Tables 5, 6, 7, and 8 deal with the number of courses and classes in the various subject-matter divisions in the typical and recommended schools. The tables show in detail the same elements of curricular organization as the preceding table.

TABLE 5

Number of Courses and Classes in Subject-matter Divisions

Typical and Recommended Schools

Group I

	Number of Courses			Number of Classes		
Subject-matter Divisions	1925 1926	1926 1927	Recommended	1925 1926	1926 1927	Recommended
English	4	4	3	4	4	3
Social Studies	4	4	5	4	4	5
Mathematics	2	2	2	3	2	2
Science	2	3	3	2	3	3
Foreign Language	2	1	2	2	1	2
Practical Arts	—	—	—	—	—	—
Miscellaneous	2	2	—	2	2	—
Total	16	16	15	17	16	15

The total number of courses for both years of the study is one more than the recommended curriculum contains. The number of classes in the typical school for 1926-27 exceeded the number in the recommended curriculum by one. If the typical school for 1926-27 were to be in complete conformity with the recommended schools, it would mean the addition of courses in social studies and foreign language and the elimination of two courses in miscellaneous subjects.

TABLE 6

Number of Courses and Classes in Subject-matter Divisions
Typical and Recommended Schools

Group II

	Number of Courses			Number of Classes		
Subject-matter Divisions	1925 1926	1926 1927	Recom-mended	1925 1926	1926 1927	Recom-mended
English	4	4	3	4	4	4
Social Studies	4	4	4	4	4	5
Mathematics	3	3	2	3	3	3
Science	3	3	3	3	3	3
Foreign Language	2	2	2	2	2	2
Practical Arts	—	—	2	—	—	2
Miscellaneous	3	2	—	3	2	—
Total	19	18	16	19	18	19

The total number of courses offered in the typical schools of 1925-26 and 1926-27 is greater than the number recommended. The number of classes for 1926-27 is one short of the recommended. The conformity of the typical school of this group 1926-27 to the recommended is closer than that of any other group.

Further changes in order to bring about complete conformity would require the elimination of the two courses in miscellaneous subjects and of one course in mathematics.

TABLE 7

Number of Courses and Classes in Subject-matter Divisions
Typical and Recommended Schools

Group III

	Number of Courses			Number of Classes		
Subject-matter Divisions	1925 1926	1926 1927	Recommended	1925 1926	1926 1927	Recommended
English	5	4	3	5	5	4
Social Studies	4	5	4	5	5	5
Mathematics	3	3	2	4	4	3
Science	3	3	4	4	4	4
Foreign Language	3	2	2	3	2	2
Practical Arts	3	2	4	3	3	4
Miscellaneous	2	3	—	3	3	—
Total	23	22	19	27	26	22

The total number of courses and classes over the two years has decreased. The recommended curriculum would decrease materially the offerings and number of classes of 1926-27. If practical arts and miscellaneous subjects are considered together, the recommended curriculum would decrease the number of courses in 1926-27 by one in every subject-matter division except science and foreign language.

TABLE 8

Number of Courses and Classes in Subject-matter Divisions
Typical and Recommended Schools

Group IV

	Number of Courses			Number of Classes		
Subject-matter Divisions	1925 1926	1926 1927	Recommended	1925 1926	1926 1927	Recommended
English	4	4	4	7	7	6
Social Studies	5	4	5	6	5	6
Mathematics	3	3	3	4	4	4
Science	3	3	4	4	4	5
Foreign Language	3	2	2	3	3	2
Practical Arts	2	3	4	2	3	4
Miscellaneous	2	3	—	2	4	—
Total	22	22	22	28	30	27

The total number of courses offered in both typical schools conformed exactly with the recommended program, but this conformity did not hold for the separate subject-matter divisions. According to the recommendations the typical school of 1926-27 would have to decrease its number of classes by three if adoption took place. Additional changes to bring the typical school of 1926-27 to the recommended organization would require the elimination of three courses in miscellaneous subjects and an increase of one course each in social studies, science, and practical arts.

CURRICULUMS OF TYPICAL AND RECOMMENDED SCHOOLS

The curriculums for the typical schools are presented in Tables 9, 10, 11, and 12. They show the titles and grade placement of courses, required or elective, and the number of class periods per week devoted to courses. The figure following each course indicates the number of hours per week devoted to the course. The letter indicates whether a course was required or elective. Courses not graded appear when they were designated in the original data as open to all pupils, or when practice within a group showed that 50 per cent of the schools offered the course in any of the four years.

TABLE 9

Curriculums

Typical and Recommended Schools
Group I

1925-26			1926-27			Recommended		
Ninth Year			*Ninth Year*			*Ninth Year*		
English	R[1]	5	English	R	5	English	R	5
Ancient, World, Modern History	E[2]	5	Citizenship, Civics	R	5	Citizenship, Occupations	R	5
Elementary Algebra	E	5	Elementary Algebra	R	5	Elementary Mathematics, Algebra, Arithmetic	R	5
Elementary Science	E	5	Elementary Science	R	5	Elementary Science	R	5
Home Economics or Agriculture	E	5 or 10						

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[1] Required.

[2] Elective.

Tenth Year			*Tenth Year*			*Tenth Year*		
English	R	5	English	R	5	English	R	5
			Biology	E	5	Biology	R	5
Modern, European, General History	E	5	World, Modern, English History	E	5	World History	R	5
El. Algebra, Adv. Algebra, Pl. Geom.	E	5	El. Algebra, Adv. Algebra, Pl. Geom.	E	5			
French or Latin	E	5						
Miscellaneous	E	5 or 10				Geography, Commercial, Industrial, Physical	R	5

Eleventh Year			*Eleventh Year*			*Eleventh Year*		
English	R	5	English	R	5	English	R	5
American History	R	5	American History	R	5	American History	R	5
			Chemistry	E	5	Chemistry	E	5
French or Latin	E	5	French, Latin, or Spanish	E	5	French or Latin	E	5
						Algebra	R	5

Twelfth Year			*Twelfth Year*			*Twelfth Year*		
English	R	5	English	R	5			
Civics, Sociology, Economics, Occupations	E	5	Economics, Civics, Sociology, Problems Democracy	R	5	Economics and Sociology	E	5
Chemistry	E	7				French or Latin	E	5

Not Graded

Home Economics, Agriculture, Manual Training	E	5 or 10
Home Economics, Agriculture, Commerce	E	5 or 10

TABLE 10

Curriculums

Typical and Recommended Schools

Group II

1925-26			1926-27			Recommended		
Ninth Year			*Ninth Year*			*Ninth Year*		
English	R	5	English	R	5	English	R	5
Ancient, World, Modern, European History	R	5	Citizenship, Civics	R	5	Citizenship, Occupations	R	5
Elementary Algebra	R	5	Elementary Alg. Elementary Math.	R	5	Elementary Math., Elementary Alg., Arithmetic	R	5
Elementary Science	R	5	Elementary Science	R	5	Elementary Science	E	5
Home Economics or Agriculture	E	10				Home Economics or Agriculture	E	5
Tenth Year			*Tenth Year*			*Tenth Year*		
English	R	5	English	R	5	English	R	5
Biology	E	5	Biology	R	5	Biology	R	5
Modern, World, Ancient, General History	E	5	Modern, World History	E	5	World History	E	5
Elementary Alg., Advanced Alg., Plane Geom.	E	5	Elementary Alg., Advanced Alg., Plane Geom.	E	5	Geography, Commercial, Industrial, Physical	E	5
French or Latin	E	5						
Practical Arts or Commerce	E	5	Home Economics, Agriculture, Manual Training	E	5	Home Economics or Agriculture	E	5
Eleventh Year			*Eleventh Year*			*Eleventh Year*		
English	R	5	English	R	5	English	R	5
Am. History	R	5	Am. History	R	5	Am. History	R	5
Plane Geom., Solid Geom.	E	5	Advanced Alg., Plane Geom., Solid Geom.	R	5	Algebra	R	5
Chemistry	E	7	Chemistry	E	5	Chemistry	E	5
French or Latin	E	5	French or Latin	E	5	French or Latin	E	5

Twelfth Year			*Twelfth Year*			*Twelfth Year*		
English	R	5	English	R	5			
Civics, Sociology, Economics, Vocational Guidance	E	5	Economics, Sociology, Problems Democracy	R	5	French or Latin	E	5
Not Graded			*Not Graded*					
Practical Arts or Commerce	E	5	Latin or French	E	5			
			Practical Arts, Commerce, Fine Arts	E	5			

TABLE 11

Curriculums

Typical and Recommended Schools

Group III

1925-26			1926-27			Recommended		
Ninth Year			*Ninth Year*			*Ninth Year*		
English	R	5	English	R	5	English	R	5
Ancient History	E	5	Citizenship	R	5	Citizenship, Occupations	R	5
Elementary Algebra	E	5	Elementary Algebra	E	5	Elementary Alg., Elementary Math., Arithmetic	R	5
Elementary Science	E	5	Elementary Science	R	5	Elementary Science	E	5
Home Economics	E	10	Home Economics or Agriculture	E	5	Home Economics or Agriculture	E	5
Tenth Year			*Tenth Year*			*Tenth Year*		
English	R	5	English	R	5	English	R	5
Biology	E	5	Biology	R	5	Biology	R	5
Modern History	E	5	Modern, World History	E	5	World History	E	5
Latin	E	5	Elementary Alg., Plane Geometry	E	5	Geography, Commercial, Industrial, Physical	E	5
Home Economics	E	10	Home Economics	E	5	Home Economics	E	5
						Agriculture	E	5

Eleventh Year			*Eleventh Year*			*Eleventh Year*		
English	R	5	English	R	5	English	R	5
Amer. History	R	5	Amer. History	R	5	Amer. History	R	5
Chemistry	E	7	Chemistry	E	5	Algebra	E	5
Latin or French	E	5	Latin or French	E	5	Chemistry	E	5
Home Economics or Agriculture	E	5	Home Economics or Agriculture	E	5	Latin or French	E	5
Twelfth Year			*Twelfth Year*			*Twelfth Year*		
English	R	5	English	R	5			
Civics, Economics, Sociology	E	5	Problems Democracy, Economics, Sociology, Economics and Sociology	R	5			
Latin (if French in 11th)	E	5						
French (if Latin in 11th)	E	5				Latin or French	E	5
Agriculture or Home Economics (if not in 11th)	E	5				Physics	E	5
Not Graded			*Not Graded*					
Geometry	E	5	Social Science	E	5			
Arithmetic	E	5						
Miscellaneous Two Courses	E	10	Miscellaneous Three Courses	E	15			
Bible or Public Speaking	E	5	Latin or French	E	5			

TABLE 12

Curriculums

Typical and Recommended Schools

Group IV

1925-26			1926-27			Recommended		
Ninth Year			*Ninth Year*			*Ninth Year*		
English	R	5	English	R	5	English	R	5
Ancient History or Civics	E	5	Citizenship, Occupations, Civics	E	5	Citizenship, Occupations	R	5
Elementary Alg., Elementary Math.	E	5	Elementary Alg. Elementary Math.	R	5	Elementary Mathematics	R	5

Elementary Science	E	5	Elementary Science	E	5	Elementary Science	E	5
Agriculture or Home Economics	E	10	Home Economics	E	5 or 10	Home Economics	E	5
						Agriculture	E	5
Tenth Year			*Tenth Year*			*Tenth Year*		
English	R	5	English	R	5	English	R	5
Modern History	R	5	World History	E	5	Modern History	R	5
Elementary Alg. Plane Geometry	E	5	Elementary Alg. Advanced Alg.	E	5	Geography	E	5
Biology	E	5	Biology	E	5	Biology	R	5
Latin	E	5	Latin or French	E	5			
Agriculture or Home Economics	E	10	Home Economics	E	5 or 10	Home Economics or Agriculture	E	5
Miscellaneous	E	5						
Eleventh Year			*Eleventh Year*			*Eleventh Year*		
English	R	5	English	R	5	English	R	5
Amer. History	R	5	Amer. History	R	5	Amer. History	R	5
Plane Geometry	E	5	Plane Geometry	E	5	Algebra	E	5
Chem. or Physics	E	7	Chemistry	E	5	Chemistry	E	5
Latin or French	E	5	Latin or French	E	5	Latin or French	E	5
Miscellaneous	E	5						
Twelfth Year			*Twelfth Year*			*Twelfth Year*		
English	R	5	English	R	5	English	R	5
Problems Democracy, Civics, Sociology	R	5	Sociology, Economics	R	5	Economics, Sociology	R	5
Latin or French	E	5				Geometry	E	5
						Latin or French	E	5
						Physics	E	5
Not Graded			*Not Graded*					
Social Studies	E	5	Home Economics, Agriculture, Manual Training	E	5			
			Miscellaneous Three Courses	E	15			

SUMMARY OF TABLES 9, 10, 11, AND 12

One of the purposes of reorganization was to bring about uniformity in curricular practices and especially those relative to the required subjects. The most marked result of the trial year with the recommended curriculums is seen in the uniformity which has been attained, although it was necessary for 50 per cent of the schools of each group to make major changes in curricular practices to cause changes in the curriculums of the typical schools of this study.

Subjects which all pupils in a given year are required to take make up the core of the curriculums and are of particular interest in situations which are state wide for given types of schools. It is significant therefore that the following shifts in the number of required courses have taken place over such an extensive number of schools as is represented in this study. Groups I, II, III, and IV have increased the number of required courses four, two, four and zero respectively, so that in 1926-27 the typical schools required nine, ten, nine, and seven courses respectively. The following courses were required in one or more typical schools for 1926-27; ninth, tenth, eleventh, and twelfth year courses in English, ninth year social science, eleventh year American history, twelfth year social science, ninth year mathematics, ninth year elementary science, tenth year biology. Ten different courses therefore are included in the core curriculums for all typical schools. Six of these ten courses are common to the core curriculums of all typical schools for 1926-27. These six are ninth, tenth, eleventh, and twelfth year courses in English, eleventh year American history, and twelfth year social science. Ninth year social science, ninth year elementary science, tenth year biology, and ninth year mathematics find places in the core curriculums of three typical schools.

Turning now to a consideration of the required courses in the recommended curriculums it will be noted that eight courses are required in the curriculums of all such organizations included in this study. These eight are ninth, tenth, eleventh, and twelfth year English, ninth year social science, ninth year mathematics, eleventh year American history, and tenth year biology. These courses are also found in the ten courses that appear in the core curriculums of the typical schools for 1926-27. Ninth year elementary science is required in the recommended curriculum of Group I and twelfth year social science in Groups III and IV.

In contrast to the conformity of the core curriculums of typical schools for 1926-27 to those of the recommended curriculums, non-conformity is apparent in that geography is not offered by 50 per cent of the schools in any group, nor is physics. Furthermore the curriculums of typical schools contain at least two courses in miscellaneous subjects which would be eliminated if they were to adopt in full the recommended curriculums.

Table 13 consists of distributions of hours per week devoted to subject-matter divisions and to non-instructional activities in typical and recommended schools. In addition, the costs per pupil per year in each subject-matter division and in non-instruction are presented for each typical and recommended school.

TABLE 13

Hours Per Week to Subject-matter Divisions
and Per Pupil Costs

GROUP I

	Hours per week			Costs per pupil per year		
Subject-matter Divisions	1925 1926	1926 1927	Recommended	1925 1926	1926 1927	Recommended
English	15	20	15	$17.25	$19.08	$15.37
Social Studies	15	20	25	16.64	20.88	21.28
Mathematics	11.25	10	10	20.93	17.29	14.19
Science	9	15	15	18.98	22.43	16.94
Foreign Language	7.5	5	10	36.49	25.15	55.33
Miscellaneous	11.25	15	—	26.36	43.68	——
Instruction	69	85	75	20.20	22.40	19.12
Non-instruction	36	35	15	43.79	35.86	15.37

GROUP II

	Hours per week			Costs per pupil per year		
Subject-matter Divisions	1925 1926	1926 1927	Recom-mended	1925 1926	1926 1927	Recom-mended
English	15	20	20	$11.43	$13.50	$13.84
Social Studies	15	20	25	12.16	13.02	17.29
Mathematics	11.25	15	15	13.68	16.27	14.07
Science	12.75	15	15	14.66	12.03	14.31
Foreign Language	7.5	10	10	22.59	39.52	36.89
Miscellaneous	15	10	—	24.33	16.27	——
Practical Arts	—	—	10	——	——	19.08
Instruction	76.5	90	95	14.75	14.87	16.38
Non-instruction	54.75	30	25	43.29	20.75	17.29

GROUP III

	Hours per week			Costs per pupil per year		
Subject-matter Divisions	1925 1926	1926 1927	Recom-mended	1925 1926	1926 1927	Recom-mended
English	18.75	25	20	$ 9.64	$12.03	$ 9.71
Social Studies	18.75	25	25	10.98	13.05	11.07
Mathematics	15	15	15	12.16	11.21	11.86
Science	16.5	20	20	14.30	15.59	13.84
Foreign Language	11.25	10	10	15.47	18.44	19.76
Practical Arts	18.75	15	20	24.21	19.76	25.15
Miscellaneous	11.25	15	—	23.72	20.25	——
Instruction	101.25	125	110	13.76	14.44	13.20
Non-instruction	57.75	73	40	24.17	35.44	19.42

GROUP IV

	Hours per week			Costs per pupil per year		
Subject-matter Divisions	1925 1926	1926 1927	Recom-mended	1925 1926	1926 1927	Recom-mended
English	26.25	35	30	$11.53	$12.58	$11.29
Social Studies	22.5	25	30	11.21	9.95	9.94
Mathematics	15	20	20	12.82	12.58	12.43
Science	16.5	20	25	16.31	11.65	13.30
Foreign Language	11.25	15	10	18.25	20.25	13.84
Practical Arts	15	20	20	18.98	23.54	23.54
Miscellaneous	7.5	20	—	12.16	20.50	——
Instruction	114	155	135	13.43	13.88	12.58
Non-instruction	46.125	55	45	21.45	20.70	16.94

SUMMARY OF TABLE 13

In every group there was an increase in total number of hours devoted to instruction, although the typical school, Group II, 1926-27, decreased the number of teachers by one. The number of hours per week devoted to non-instruction decreased with the exception of Group IV, in which group there was the greatest increase in teachers over the period of the two years studied.

The comparison may be simplified by limiting the items of cost per pupil to two, (1) instruction in all subject-matter divisions combined in one unit and termed aggregate cost of instruction, and (2) cost of non-instruction. From 1925-26 to 1926-27 aggregate costs of instruction per pupil have not been decreased, being increased in two cases. Nor have significant reductions in salary cost per pupil in the subject-matter divisions occurred. Salary costs of non-instruction per pupil have decreased, however, in every instance except Group III.

Comparison of the typical schools, 1926-27, with the recommended schools shows a reduction in aggregate cost of instruction per pupil except in Group II, while costs of non-instruction are further decreased in every instance. The above table shows that, along with a movement to conform to the recommendations of the state committee in curricular and school organization, *there is a general trend toward an increase in the number of hours per teacher devoted to instruction and a decrease in the number of hours devoted to non-instruction.*

Table 14 presents median enrollments in typical schools by years. It shows the enrollments for 1926-27 which were used in deriving the recommended school organization.

TABLE 14

Median Enrollment by Years in Typical Schools
1925-26

	Ninth Year	Tenth Year	Eleventh Year	Twelfth Year	Total
Group I	20	13	10	9	52
Group II	30	19	18	13	80
Group III	40	31	25	20	116
Group IV	47	34	32	23	136

		1926-27			
Group I	20	15	11	8	54
Group II	29	21	16	14	80
Group III	42	31	22	19	114
Group IV	49	39	33	26	147

SUMMARY OF TABLE 14

The small enrollments in the eleventh and twelfth years of both typical schools for Group I prohibit elective courses in these years if costs are to be kept within reasonable limits. However, these small enrollments allow alternation of eleventh and twelfth year courses. The ninth year enrollments in the typical schools of Group II are near the point where second sections are necessary. Schools making up the typical school for each year either provided second sections or were operating large classes. In Group III the ninth and tenth year enrollments show the need of second sections in required courses. The combined enrollment of the eleventh and twelfth years is so large as to make alternation of required courses in these years impracticable. The eleventh year enrollment in each of the typical schools of Group IV is large enough to necessitate second sections in required courses. The recommended organizations, however, do not make provision for such an arrangement, and large classes result.

ADMINISTRATIVE EFFECTS

Administrative effects resulting from partial and complete adoption of the recommended curricular and school organizations are presented in summaries. Differences in number of teachers, number of courses, number of classes, and salary costs per pupil were the units by which it was proposed to measure these administrative effects. These summaries are, therefore, in the form of such units. They state increases or decreases in number of teachers, courses, and classes, and in salary costs per pupil from typical schools, 1925-26, to typical schools, 1926-27, and from typical schools, 1926-27, to the recommended schools.

DIFFERENCES IN NUMBER OF TEACHERS

	Effects of partial adoption Typical School 1925-26 to Typical School 1926-27		Effects of complete adoption Typical School 1926-27 to Recommended School	
	Increase	Decrease	Increase	Decrease
Group I	0	0		1
Group II		1	0	0
Group III	2/10			1-6/10
Group IV	9/10			1

DIFFERENCES IN NUMBER OF COURSES

	Effects of partial adoption Typical School 1925-26 to Typical School 1926-27		Effects of complete adoption Typical School 1926-27 to Recommended School	
	Increase	Decrease	Increase	Decrease
Group I	0	0		1
Group II		1		2
Group III		1		3
Group IV	0	0	0	0

DIFFERENCES IN NUMBER OF CLASSES

	Effects of partial adoption Typical School 1925-26 to Typical School 1926-27		Effects of complete adoption Typical School 1926-27 to Recommended School	
	Increase	Decrease	Increase	Decrease
Group I		1		1
Group II		1	1	
Group III		1		4
Group IV	2			3

DIFFERENCES IN SALARY COSTS OF
INSTRUCTION PER PUPIL

	Effects of partial adoption Typical School 1925-26 to Typical School 1926-27		Effects of complete adoption Typical School 1926-27 to Recommended School	
	Increase	Decrease	Increase	Decrease
Group I	$2.20			$3.28
Group II	.12		$1.51	
Group III	.68			1.24
Group IV	.45			1.30

DIFFERENCES IN SALARY COSTS OF
NON-INSTRUCTION PER PUPIL

	Effects of partial adoption Typical School 1925-26 to Typical School 1926-27		Effects of complete adoption Typical School 1926-27 to Recommended School	
	Increase	Decrease	Increase	Decrease
Group I		$7.93		$20.49
Group II		22.54		3.46
Group III	$11.27			16.02
Group IV		.75		3.76

It is necessary to consider the above summaries of units of differences in number of teachers, courses, and classes in their relationship to each other in order to gain the true meaning of the administrative effects of high school reorganization. For instance, in Group I, complete adoption would decrease the number of teachers in the typical school of this group for 1926-27 by one. Such a change would be expected to alter the number of offerings considerably, but reference to the summaries shows that it would cause a reduction in both courses and classes of just one. Table 13 shows that this reduction of one course and class would be brought about by eliminating fifteen hours devoted to practical arts, commerce, fine arts, or normal training (classified as miscellaneous subjects) and dividing ten hours of the time between social studies and foreign language. Further analysis of this situation is made in the section, Implications Regarding Reorganization, which appears later in this chapter.

Complete adoption of the recommendations by the typical school of Group III, 1926-27, would cause a reduction of one and six-tenths teachers and a decrease of three courses and four classes. Complete adoption by the typical school of Group IV, 1926-27, would reduce the number of teachers by one. But in contrast to the same situation in Group III the number of courses would not be changed. The number of classes, however, would be reduced by three. Complete adoption of the recommended organization would cause the typical school of this group to revert to practically the same number of teachers and classes as the typical school of the previous year. The effects of complete adoption as revealed in units of difference mentioned above would be to decrease the number of teachers and classes in Groups III and IV. The practicability of such reductions is discussed in the following section, Implications Regarding Reorganization.

The administrative effects of other phases of reorganization are revealed in the units of difference in costs of instruction and non-instruction. The two factors determining cost in this study were hours per week devoted to each division of activity and the number of pupils served by each division. Although the rate of cost for the typical schools of 1925-26 is different from the rate for the typical schools 1926-27 and the recommended schools, the rates in each division and for each year were based upon $1660, the average annual salary per teacher. Therefore, the resulting cost figures vary as to time devoted to instruction and non-instruction and as to the distribution of pupils in these divisions. They evaluate curriculur and school organizations upon an equal basis and express the comparative economy of different systems.

The units of difference between cost of instruction in the typical school of 1925-26 and in the typical school of 1926-27 are small but would indicate that salary cost of instruction per pupil was greater during the process of adjustment to the recommended organization. An analysis of factors underlying cost rates shows that the shift toward longer class periods has been responsible in a measure for this increase. Complete adoption of the recommended curricular and school organization would decrease salary costs of instruction per pupil from one to three dollars except in Group II where there is an increase of $1.51.

In contrast to the increase in salary cost of instruction per pupil from 1925-26 to 1926-27, there was a decrease in salary cost of non-instruction per pupil except in Group II. These decreases range in amount from $0.75 to $22.54. Complete adoption would consistently decrease cost of non-instruction per pupil and in amounts ranging from $3.46 to $20.49.

The major effects of the curricular reorganization in the West Virginia high schools involved in this study have been to focus time upon fewer courses, thereby simplifying the organization of the curriculum and the assignment of teaching combinations. More economical procedures in adjusting teaching loads have lessened the number of hours devoted to non-instructional activities. This study also shows that complete adoption of the reorganization program would bring about still more economical procedures in organizing the teaching force so that fewer hours per week would be devoted to non-instructional activities.

IMPLICATIONS REGARDING REORGANIZATION

The results of this study show that there has been a decided tendency upon the part of four year high schools in

West Virginia with an enrollment of less than 160 to reorganize their curriculums in harmony with the recommendations of the State Department; but that still further changes must be made before 50 per cent of the schools will be operating in complete agreement with the curriculum which it is suggested that they adopt.

In so far as total offerings are concerned, very little further change is necessary. These changes which are necessary are in the nature of a re-distribution and a definite grade placement of courses. Tables 5, 6, 7, and 8 show that the number of courses in the academic subject-matter divisions would not be greatly altered by complete adoption. They show, also, that there would be little decrease in the number of courses in non-academic subjects in all schools except those of the first group. The greatest change in the field of non-academic subjects would be in the restriction of the offerings of any one school to one or two of the following subjects: home economics, agriculture, or commerce. If practical arts subjects are to be included in the curriculum of schools with an enrollment of less than seventy pupils and if practice in West Virginia for schools of such size would be to limit the number of teachers to three, then foreign language would be eliminated, or, if foreign language is to be offered, practical art subjects would be eliminated.

In general, the limiting factors of the number of teachers that may be employed and still keep costs within reasonable limits, and the number of teaching combinations which may be made, warrant the conclusion that West Virginia might well undertake measures to solve the organization problem of high schools with enrollments less than seventy pupils by consolidation, or by increasing the scope of these schools from years nine to twelve to years seven to twelve. In each of these types of organization the limiting factor of subject combination ceases to operate in such prohibitive degrees.

The decisions of the committee, relative to the years in which second sections become necessary and in which alternation of courses is possible, are not substantiated by the findings of this study in certain instances. By reference to Table 14 it may be seen that the enrollment in the eleventh year, Group IV, for both years of the study, was in excess of thirty, which would probably necessitate second sections of required courses. The recommended organization allows for only one section. In all other cases the decisions regarding the years for which second sections are needed are practical, according to the findings of this study.

Since the combined enrollment of the eleventh and twelfth years in 50 per cent of the schools in Groups II and III is thirty or more, alternation of required courses is not practical in these groups. Alternation is practical in schools classified as Group I, since the combined enrollments of the eleventh and twelfth years in 50 per cent of the schools is not more than nineteen.

Since second sections in required courses in the eleventh year is current practice in the schools of Group IV, and since single sections would result in excessively large classes, it is suggested that the number of teachers recommended for schools of this size be increased from six to seven in cases where second sections in the eleventh year are not already provided for. And, since this study shows that alternation of courses in schools of Group III is not the current practice, and if it were to become the practice, excessively large classes would result, it is suggested that the number of teachers in the recommended organization be increased from five to six.

The changes in the teaching force as suggested above are shown in the following outlines,[1] and are suggested replacements for those presented on pages 23 and 25.

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[1] These revised organizations were outlined by L. O. Taylor, State Supervisor of High Schools, West Virginia, E. E. Church, President of Secondary School Principals Association of West Virginia, and the writer.

REVISION OF THE ORGANIZATION OF TEACHING FORCE, FROM FIVE TO SIX TEACHERS, FOR HIGH SCHOOLS OFFERING HOME ECONOMICS AND TWO YEARS OF AGRICULTURE

(Not Smith-Hughes)

(Numbers refer to years in which courses are offered)

	Periods Per Week
Teacher A	
English 9—Section A	5
English 9—Section B	5
English 12	5
*French or Latin 11	5
†French or Latin 12	5
	25
Teacher B	
English 10—Section A	5
English 10—Section B	5
English 11	5
Modern World History	5
Library	5
	25
Teacher C	
Geography 10	5
Citizenship and Occupations 9—Section A	5
Citizenship and Occupations 9—Section B	5
Elementary Economics and Sociology 12	5
American History 11	5
	25
Teacher D	
Biology 10—Section A	5
Biology 10—Section B	5
Home Economics 9	5
Home Economics 10	5
	20

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*Fine Arts 11.

†Fine Arts 12.

Teacher E	
Agriculture 9	5
Agriculture 10	5
Elementary Science 9	5
Chemistry 11	5
Physics 12	5
	25

Principal	
Geometry 12 or Algebra 11	5
Mathematics 9	10
	15

REVISION OF THE ORGANIZATION OF TEACHING FORCE, FROM SIX TO SEVEN TEACHERS, FOR HIGH SCHOOLS OFFERING HOME ECONOMICS AND TWO YEARS OF AGRICULTURE

(Numbers refer to years in which courses are offered)

Teacher A	Periods Per Week
English 10—Section A	5
English 10—Section B	5
English 12	5
*French or Latin 11	5
†French or Latin 12	5
	25

Teacher B	
English 9—Section A	5
English 9—Section B	5
English 11—Section A	5
English 11—Section B	5
Library	5
	25

Teacher C	
Citizenship and Occupations 9—Section A	5
Citizenship and Occupations 9—Section B	5
World History 10—Section A	5
World History 10—Section B	5
Geography 10	5
	25

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*Fine Arts 11.

†Fine Arts 12.

Teacher D

Mathematics 9	10
Algebra 11	5
Geometry 12	5
Elementary Science 9	5
	25

Teacher E

Home Economics 9	5
Home Economics 10	5
Biology 10—Section A	5
Biology 10—Section B	5
	20

Teacher F

Agriculture 9	5
Agriculture 10	5
Chemistry 11	5
Physics 12	5
	20

Principal

American History 11—Section A	5
American History 11—Section B	5
Elementary Sociology and Economics 12	5
	15

CHAPTER VII

LIMITATIONS OF THE STUDY

The number of individual schools making up the different groups is small, therefore any measure used in obtaining a typical school must be based on a small number of cases. However, the advantages in obtaining one organization made up of all the elements of the schools of the same class and also the facility with which it could be used in making comparisons and studying shifts were so great that they are believed to outweigh the lack of refinement in method. Again, as has been previously stated, the number of schools studied is within 14 per cent of the total population for 1925-26 and 7 per cent for 1926-27. Therefore after trying out procedures that involved either a comparison of school with school, regardless of changes in enrollment, a summing of each element or obtaining the average amount of each element, the method of building up a typical school for each group was selected as best suited to the purposes of this study.

The period of time included in the study is short. Much more revealing and clear-cut differences might have been possible had a longer span elapsed since the reorganization movement began. However, the situation in the state has dictated the span as well as the scope of the problem.

Another limiting factor arose in transposing the enrollments of the typical schools of 1926-27 into the recommended schools. Elective classes were assumed equally popular and the enrollment for a given year divided among the electives of the year, upon an equal basis.

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